MAGMA COPPER COMPANY

FLORENCE PROJECT

June 8, 1995

Ms. Shirin Tolle
Aquifer Protection Project Officer
Arizona Department of Environmental Quality
3033 North Central Avenue
Phoenix, Arizona 85012

15-1899/05

Subject: Magma Copper Company, Florence Project
Monthly Progress Report
May 1995

Dear Ms. Tolle:

Magma Copper Company (Magma) is pleased to provide the May 1995 Progress Report for the Florence Project.

Drilling and Well Installation Progress

A total of 23 wells have been installed: 13 monitoring wells; 4 pumping wells; and 6 observation wells (see Table 1). Only 5 monitoring wells (M6-GU, M7-GL, M8-O, M9-S, and M13-S) were installed prior to May 1995. These represent the completion of the monitoring well cluster northwest, southeast, and in the middle of the in-situ mine perimeter. Estimated production of these wells is shown on Table 1 where development is completed. These rates are field estimates of water production observed during the initial development and represent an estimate of the anticipated production rates expected for each well.

A full suite of geophysical logs were completed in 9 wells and 5 coreholes (see Table 2). Caliper logs were completed in two additional wells and acoustic televiewer logs have been completed in 1 well and each of the 5 coreholes. In each of the 5 coreholes, the acoustic televiewer logs were correlated with the rock core. Based on these correlations, intervals were selected for packer testing. The results of these activities are shown on Table 3.

Drilling in June is scheduled to include completion of all monitoring wells, and the majority of the aquifer tests wells. It is anticipated that groundwater sampling of the northwest, southeast, and middle monitoring well clusters will be completed during the week of June 15, 1995.

Modeling Activities

The proposed domain for the groundwater flow model has been expanded to include a regional area which incorporates both the Gila River and wells within a 5-mile radius of the in-situ mining area. The initial parameters used for the groundwater flow and transport modeling were presented to the Arizona Department of Environmental Quality (ADEQ) in the Aquifer Protection Permit (APP) Application Work Plan Response to Supplemental Items dated April 28, 1995.

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Table 3 of this submittal includes the current and future groundwater modeling parameters. A meeting to review the current model parameters is scheduled for July 11. 1995 at the Phoenix office of Brown and Caldwell.

Column testing was initiated during May at METCON Laboratories in Tucson, Arizona. The proposed design of these tests was presented to ADEQ in the APP Application Work Plan Response to Supplemental Items dated April 28, 1995. Representative samples through the granodiorite porphyry, quartz monzonite porphyry, diabase dike material, and Gila Conglomerate were selected for this testing. To determine the mineralogy, X-ray diffraction (XRD) analysis was initiated on representative samples of fault gouge materials and portions of the Gila Conglomerate.

Aquifer Protection/Underground Injection Control (UIC) Permit Activities

Magma presented the U.S. Environmental Protection Agency (USEPA) with the present economic feasibility analysis of the mineral resource at the Florence Project. This analysis is part of the Aquifer Exemption application requirements. The first quarterly meeting for the APP Application is scheduled for June 1, 1995 and will include a review of comments on the April 28, 1995 data submittal.

Additional Activities During April

Aquifer tests were initiated during May. P39 was pumped for approximately 1,000 minutes and P12 was pumped for approximately 10,000 minutes. The data from these two tests will be available for review in June, 1995.

Several items are scheduled to be submitted for review in June: Vadose Zone Sampling and Analysis Plan; Priority Corehole Plugging and Abandonment Plan; a synopsis of groundwater modeling standards; Spring 1995 Regional Water Elevation Map; and a synopsis of the geostatistical methods used by the Mine Evaluation Determination System.

The review of the groundwater model is tentatively scheduled for July 11, 1995 in the Phoenix office of Brown and Caldwell at 10:00 a.m. The Florence Project Team looks forward to presenting the initial modeling parameters and current groundwater modeling scenarios to the ADEQ. If you have any questions, please do not hesitate to contact me at (520) 868-5094 or Mr. Steve Mellon at Brown and Caldwell, telephone number (602) 222-4445 or (520) 868-0474.

Very truly yours,

John Kline
Environmental Project Manager

JK:kw
Attachment

cc: Mr. Bruce Gaither, Digital Precision GeoScience
Mr. Steve Mellon, Brown and Caldwell
Mr. Dan Ramey, Magma Copper Company
Mr. Terry Steinborn, Applied Research Associates, Inc.

Table 1. Well Installation Data

Well Number	Total Depth (feet)	Screen Material				Riser Pipe		Estimated Production Rate (gpm)[a]
		Type	Diameter (inches)	Slot Size (inches)	Depth (feet)	Type	Diameter (inches)	
M2-GU	270	PVC	5	0.08	198 to 258	PVC	5	NA
M3-GL	370	PVC	5	0.08	298 to 338	PVC	5	NA
M4-O	510	PVC	5	0.08	405 to 465	PVC	5	NA
M5-S	613	PVC	4	0.08	516 to 576	LCS	5 and 4[b]	NA
M6-GU	590	PVC	5	0.08	524 to 564	PVC	5	7.5
M7-GL	940	PVC	4	0.08	859 to 919	LCS	5 and 4[c]	1.1
M8-O	1,115	PVC	4	0.08	1,010 to 1,070	LCS	5 and 4[d]	25
M9-S	1,578	Stainless Steel	4	0.08[e]	1,510 to 1,570	LCS	5 and 4[f]	0.9
M10-GU	290	PVC	5	0.08	218 to 258	PVC	5	NA
M11-GL	370	PVC	5	0.08	290 to 330	PVC	5	NA
M12-O	510	PVC	5	0.08	420 to 480	PVC	5	NA
M13-S	943	PVC	5	0.08	851 to 911	LCS	5	NA
M14-GL	950	PVC	5	0.08	778 to 838	LCS	5	NA
O3-GL	395	PVC	5	0.08	325 to 365	PVC	5	30
P5-O	800	PVC	6	0.08	414 to 770[g]	PVC	6	Developed
O5.1-O	880	PVC	4	0.08	672 to 832	LCS	5 and 4[h]	Developed
O5.2-O	880	PVC	4	0.08	712 to 771	PVC	4	Developed
P12-0	999	PVC	6	0.02	440 to 940	PVC	6	70
O12-0	970	PVC	4	0.08	434 to 929	PVC	4	Developed
O12-GL	395	PVC	5	0.08	325 to 365	LCS	5	40
P39-0	915	PVC	6	0.08	471 to 826	PVC	6	Developed
O39-0	916	PVC	5	0.08	474 to 890	PVC	5	Developed
P49-O	1,288	PVC	6	0.08	807 to 1,222	PVC	6	NA

[a] Preliminary data collected during development only.
[b] Tapered riser pipe from 5-inch to 4-inch casing at 516 feet below the ground surface.
[c] Tapered riser pipe from 5-inch to 4-inch casing at 593 feet below the ground surface.
[d] Tapered riser pipe from 5-inch to 4-inch casing at 591 feet below the ground surface.
[e] Wire wrap screen
[f] Tapered riser pipe from 5-inch to 4-inch casing at 502 feet below the ground surface.
[g] Screen interval contains 220 feet of slotted screen and 140 feet of blank casing because of material shortages. Location of blank casings were placed in areas of lower permeability as determined by the geophysical logs.
[h] Tapered riser pipe from 5-inch to 4-inch casing at 494 feet below the ground surface.

gpm = gallons per minute
LCS = low carbon steel
PVC = polyvinyl chloride
NA = not available

Table 2. Geophysical Logs

Hole Number	Total Depth (feet)	Type of Geophysical Log									Comments
		TV-3D	Resistivity	S.P.	Caliper	Temperature	Gamma	Neutron	Density	Sonic	
M5-S	610	NR	√	√	√	NR	√	√	√	√	Clay Seam in Gila Conglomerate
M6-GU	590	NR	NR	NR	NR	NR	NR	NR	NR	NR	
M7-GL	940	NR	NR	NR	NR	NR	NR	NR	NR	NR	
M8-0	1,115	NR	NR	NR	NR	NR	NR	NR	NR	NR	
M9-S	1,578	√	√	√	√	√	√	√	NR	√	Clay Seam in Gila Conglomerate
M10-GU	290	NR	NR	NR	NR	NR	NR	NR	NR	NR	
M11-GL	370	NR	NR	NR	√	NR	NR	NR	NR	NR	Backfill Quantities
M12-O	510	NR	NR	NR	NR	NR	NR	NR	NR	NR	
M13-S	943	NR	√	√	√	NR	√	√	√	√	Clay Seam in Gila Conglomerate
M14-GL	950	NR	√	√	√	√	√	√	NR	√	Clay Seam in Gila Conglomerate
O3-GL	395	NR	NR	NR	NR	NR	NR	NR	NR	NR	
O5.1-O	880	NR	√	√	√	NR	√	√	√	√	Clay Seam in Gila Conglomerate
O5.2-O	880	NR	√	√	√	√	√	√	NR	√	Clay Seam in Gila Conglomerate
P12-0	999	NR	√	√	√	NR	√	√	√	√	Reverse Circulation
O12-O	970	NR	NR	NR	NR	NR	NR	NR	NR	NR	
O12-GL	395	NR	NR	NR	√	NR	NR	NR	NR	NR	Backfill Quantities
O39-0	916	NR	√	√	√	NR	√	√	√	√	Reverse Circulation
P49-O	1,280	NR	√	√	√	√	√	√	NR	√	Clay Seam in Gila Conglomerate

Table 2. Geophysical Logs

Hole Number	Total Depth (feet)	Type of Geophysical Log									Comments
		TV-3D	Resistivity	S.P.	Caliper	Temperature	Gamma	Neutron	Density	Sonic	
MCC-537[b]	1,207	√	√	√	√	NR	√	√	NR	√	Clay Seam in Gila Conglomerate
MCC-540[b]	1,176	√	√	√	√	NR	√	√	NR	√	Fracture Orientations
MCC-541[b]	1,031	√	√	√	√	NR	√	√	NR	√	Fracture Orientations
MCC-544[b]	1,320	√	√	√	√	NR	√	√	NR	√	Fracture Orientations
MCC-533[a]	1,073	√	√	√	√	NR	√	√	NR	√	Fracture Orientations

[a] 6-inch corehole
[b] HX corehole

NR = not run

Table 3. Packer Test Data

Hole Number	Test Intervals (feet)	Fracture Gradient[a] (pounds per square inch per foot)	Comments
MCC-533	860 to 895	0.71	Quartz Monzonite in the Oxide Zone
	740 to 775	0.73	Quartz Monzonite in the Oxide Zone
	650 to 685	0.80	Quartz Monzonite in the Oxide Zone
	605 to 640	0.82	Quartz Monzonite in the Oxide Zone
MCC-537	470 to 520	0.68	Quartz Monzonite in the Oxide Zone
	390 to 440	0.66	Quartz Monzonite in the Oxide Zone
MCC-541	1,062 to 98	0.93	Granodiorite in the Oxide Zone
	984 to 1,010	0.87	Granodiorite in the Oxide Zone
MCC-544	1,255 to 1,318@	0.69	Sulfide
	1,003 to 1,069@	0.84	Quartz Monzonite in the Oxide Zone
	899 to 965@	0.74	Quartz Monzonite in the Oxide Zone
	425 to 485@	Unable to Fracture	Quartz Monzonite in the Oxide Zone

[a] $\pm$ 1 percent error for 2,000 pounds per square inch (psi)

NA = not available